

REMARKS

Claim 4 has been amended such that the solid acid is selected from zeolites and mixtures thereof. Support for this amendment can be found on page 3, lines 13-23 of the present application. No new matter has been added through this amendment.

The listing of Claims presented herein will replace all prior versions, and listings, of Claims in the Patent Application.

REJECTION UNDER 35 U.S.C. 112(FIRST PARAGRAPH)

Claims 1-10 have been rejected under 35 U.S.C. 112 first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

EXAMINER'S POSITION

The Examiner takes the position that the present specification provides support for the limitation "said catalyst contains no halogen component", but the Examiner takes the position that the specification does not describe what material can be considered "halogen component", such as chlorine element or chloride component. The Examiner states that this term is so general that one having ordinary skill in the art cannot decide what it is.

APPLICANT'S POSITION

Applicants respectfully disagree with the Examiner. One having ordinary skill in the art of catalysis would clearly understand the limitation so provided. With regards to the examiner's example of chlorine versus chloride, applicants respectfully submit that chlorine is a gas at atmospheric conditions, thus, its presence within or on a catalyst would be quite suspect, and one having ordinary skill in the art would thus not draw the conclusions that the examiner has drawn. However, for the sake of completeness, whether chlorine or chloride was present, a halogen component would be present in either case. Thus, one having ordinary skill in the art would understand that the presence of either of these two materials would be the presence of a halogen, e.g. chlorine. Further, the halogens are a clearly defined group of elements from the periodic table, and, thus, one having ordinary skill in the art would understand that their presence in any form would mean that a halogen component is present, i.e. as an element or part of a compound. The Examiner is requested to reconsider and withdraw this rejection.

REJECTION UNDER 35 U.S.C. 112(SECOND PARAGRAPH)

Claims 4 and 5 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**EXAMINER'S POSITION**

The Examiner points out that claim 4 includes the limitation that the solid acid is selected from chlorinate aluminum oxides or clays wherein claim 1 includes the limitation that the catalyst contains no halogen component.

**APPLICANT'S POSITION**

Claim 4 has been amended such that the solid acid is selected from zeolites and mixtures thereof. Thus, the discrepancy between claims 4 and 1 has been removed. The Examiner is requested to reconsider and withdraw this rejection.

**REJECTION UNDER 35 U.S.C. 102**

Claims 1-8 have been rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent Number 4,918,255, Chou, et al. ("Chou").

**EXAMINER'S POSITION**

The Examiner takes the position that Chou discloses a process of alkylating isoparaffin with olefin in the presence of a catalyst containing acidic solid containing Y zeolite and group VIII metal and an amount of water. The Examiner points to the Abstract, col. 2, lines 10-14; col. 5, lines 38-46; col. 6, line 11; and col. 6, lines 25-33.

The Examiner continues that since he has rejected the limitation "halogen component" as included in the present claims, any halogen compound in the references may not be excluded by the present claim limitation.

**APPLICANT'S POSITION**

Applicants respectfully disagree with the Examiner, as it is applicants' position that Chou does not anticipate the presently claimed invention. In order to anticipate, a given reference must disclose, either directly or indirectly, each and every element of the claimed invention.

Applicants respectfully submit, as noted above, that the inclusion of the limitation "no halogen component" is clear to one having ordinary skill in the art of catalysis. One having ordinary skill in the art of catalysis would clearly understand when and how halogens appear in a catalyst, e.g. by using halogenated materials as binders, etc.

It has been frequently established by Federal Circuit decisions that anticipation is established only if all of the elements of an invention as stated in a patent claim are identically set forth in a single prior art reference, Transclean Corporation v. Bridgwood Services, Inc., 290 F.3d 1364, 62 U.S.P.Q.2d 1865 (Fed. Cir. 2002); Gechter v. Davidson, 116 F.3d 1454, 1457, 43

U.S.P.Q.2d 1030, 1032 (Fed. Cir. 1997); Mehl/Biophile International Corporation v. Milgraum, 192 F.3d 1362, 1365, 522 U.S.P.Q.2d 1303, 1306 (Fed. Cir. 1999).

The present invention relates to a process for alkylating a hydrocarbon feed. The process comprises contacting the hydrocarbon feed to be alkylated with an alkylation agent in the presence of a catalyst. The catalyst comprises a solid acid, a hydrogenation metal, and 1.5-6wt.% water, measured on the loss of ignition at 600°C, to obtain an alkylate. The catalyst also does not include a halogen component.

The present invention includes the limitation that the catalyst contains no halogen component. The catalyst of Chau contains BF<sub>3</sub>, always. Thus, Chau does not teach each and every component of the present invention since Chau always includes a halogen component; see, for example, Chau, col. 8, lines 1-6.

Further, Chou does not disclose that the catalyst used therein includes a hydrogenation metal. Instead, Chou teaches that the catalyst useful in his invention is a composite catalyst comprising a Lewis Acid and a large pore zeolite and/or a non zeolitic inorganic oxide, see Abstract of Chou. Chou also states at col. 5, lines 13-16 that the catalyst used in his process is a Lewis Acid and a large pore zeolite and/or a non zeolitic inorganic oxide in the presence of a controlled amount of water.

Chou continues at col. 5, lines 38-46, that the catalyst used in its process is a "novel isoparaffin alkylation catalyst." The catalyst system includes a Lewis acid, such as BF<sub>3</sub>, in combination with a large pore zeolite, such as Zeolite Beta, and/or a non-zeolitic solid inorganic oxide, such as SiO<sub>2</sub> or Al<sub>2</sub>O<sub>3</sub>, to promote paraffin/olefin alkylation, all in the presence of a closely controlled amount of water."

Chou does not include teachings of each and every element of the presently claimed invention. In particular, Chou does not provide teaching that the catalyst used in his process includes a hydrogenation metal.

With regards to the hydrogenation metal, the catalyst of Chou is referred to throughout the application, as noted above. There is no teaching in Chou that the catalyst contains a hydrogenation metal. Instead, the Examiner relies on the disclosure in Chou at col. 2, lines 10-14 to support the inclusion of a hydrogenation metal in the Chou catalyst, i.e. the incorporation by reference of United States Patent Number 3,644,565, Biale ("Biale"). Applicants respectfully point out that the section cited refers to a prior art patent included in the Background of the Invention section. Applicants respectfully point the Examiner to col. 4, lines 60-66 of Chou. In this section, Chou clearly states that his "invention overcomes problems posed by the prior art in that the catalyst aging is significantly reduced." Thus, Chou expressly teaches that the catalyst

used therein is different from the prior art catalysts, including the patent discussed at col. 2, lines 10-14.

While the applicant notes that Chou does incorporated by reference the teachings of Chou, applicants respectfully submit that this would be a reference for which Chou demonstrates an improvement over.

The Examiner is requested to reconsider and withdraw this rejection.

**REJECTION UNDER 35 U.S.C. 103(a)**

Claims 9 has been rejected under 35 U.S.C. 103(a) as being unpatentable over by United States Patent Number 4,918,255, Chou, et al. ("Chou").

**EXAMINER'S POSITION**

The Examiner takes the position that claim 9 is taught by Chou through the incorporation by reference of Biale.

**APPLICANTS' POSITION**

Applicants respectfully disagree with the Examiner, and applicants take the position that inventions embodied in Claim 9 are not obvious in light of the teachings of Chou. Claim 9 is a dependent claim, and by definition includes all of the limitations of the claims from which it depends. Claim 9 depends from claim 1, and is therefore inventive for, among other reasons, the reasons discussed above.

In addition, applicants take the position that the combination of Biale with Chou is improper. As noted in Chou, Biale is a prior art publication. While applicants note that Chou incorporated Biale by reference, Chou also expressly teaches away from combining its invention with prior art inventions. Applicants again respectfully point the Examiner to col. 4, lines 60-66 of Chou. In this section, Chou clearly states that his "invention overcomes problems posed by the prior art in that the catalyst aging is significantly reduced." Thus, one having ordinary skill in the art would not be motivated to combine the teachings of a reference having "problems" with the invention described as overcoming those problems.

The Examiner is requested to reconsider and withdraw this rejection.

**DOUBLE PATENTING**

Claims 1-10 have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-42 of copending Application No. 12/021,096.

**EXAMINER'S POSITION**

The Examiner takes the position that the present invention is unpatentable over claims 1-42 of co-pending Application No. 12/021,096.

APPLICANTS' POSITION

Applicants are unsure as to this rejection. In his Advisory Action, the Examiner noted the withdrawal of this rejection due to the filing of the requisite terminal disclaimers.

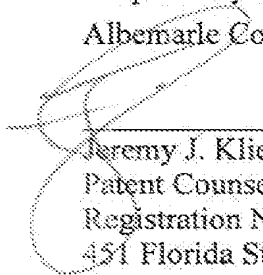
Applicants believe this to be a minor oversight, but request the Examiner to reconsider and withdraw this rejection in light of the previously filed terminal disclaimers.

Based on the preceding amendments and remarks, and the prior filed terminal disclaimer, the Examiner is requested to reconsider and withdraw all rejections, and pass this application to allowance. The Examiner is encouraged to contact applicants' attorney should the Examiner wish to discuss this application further.

Respectfully Submitted:

Albemarle Corporation

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